Migraine

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HEADACHE was mentioned early in history under the generic term of Cephalalgia.

Migraine has been known to medical science for nearly two thousand years, and in the first century of the Christian era Aretæus of Cappadocia mentioned heterocrania; the name hemicrania was introduced by Galen, and also mentioned by Celsus; Hippocrates did not attempt to differentiate it, however. Tissot, in 1784, described it in considerable detail in his Dictionary of Medicine.

The name hemicrania was modified to hemigrania, migranea, and megrim, and in the eighteenth century the name migraine came from the French school. The relationship of migraine with eczema, urticaria, asthma, hay-fever, and epilepsy was mentioned in the early part of the nineteenth century by the French Medical School also. So that it will be seen that migraine has joined that ignoble company of the "unsatisfactory diseases," and there it seems to be destined to remain, for the time being at any rate.

It has been stated by an American writer that approximately 7 per cent. of the population of U.S.A. suffers from migraine in some degree, and that 30 per cent. of the sufferers show signs of the disease before ten years of age.

INVESTIGATION.

A great deal of work has been done on the subject of migraine, if one is to judge by the large amount of literature on the subject; and it has been attacked from all angles: investigations into heredity, diet, allergic sensitisation, blood pressures, biochemistry, bacteriology, and the various focal causes, such as septic foci, ocular errors, diseases of various special systems, and, lastly, the E.E.G.

A great deal of information has thus been made available, and a great deal of help may be given to patients suffering from this disease.

DEFINITION.

One definition of migraine is given as "A paroxysmal disease (symptom complex) characterised by hemicrania, and symptomatic evidence of cortical involvement." Osler defined it as "A paroxysmal affection characterised by severe headache, usually unilateral, and often associated with disorders of vision." And these definitions cover it adequately, from a broad point of view.

TYPES.

Before passing to the disease itself, I think it is well to mention the types of people who seem to suffer from migraine, and here, after years of observation, one can give the average statement that they are usually the more sensitive and more emotional individuals of the community, and practically always those of superior intelligence; a glance at their hands will often give a clue to the personality, although in many cases the individual's occupation has modified the shape and texture of his hands; the usual type is a rather narrow hand with long fingers—the artistic hand. This, of course, is an average statement, and all types are seen.

The migraine sufferer is usually one who worries, and hence his mental make-up is such that his temperament lays him open to feel more acutely the vicissitudes of life, producing psychical changes predisposing to attacks; indeed, a vicious circle is formed.

Heredity.

And, of course, as these traits of personality are often handed on to the succeeding generations, we get a perpetuation of migraine in families, and also individuals tend to marry, in the main, those of similar mentality and outlook, with the result that the tendency is to increase the number of individuals predisposed to migraine, and, indeed, the same applies to the whole group of allergic diseases as well, and it will later be pointed out that there is a close clinical relationship between them and migraine.

Sex.

As regards the incidence of migraine according to sex, various observers have put the number at one woman to one man, varying up to four women to one man. My own impression, considering the numbers which I have seen, was about two to one, and this tends to fit in with the generally accepted fact that women are more sensitive in many ways than men, and perhaps more emotional as a rule, so more prone to migraine.

Age Onset.

The age of onset is interesting, as a number of children are seen with typical migraine, usually over 10 years of age, but few under, and in my own experience they have usually been of the quick, alert, restless, and rather fragile type, usually dark haired, and it is a point of interest that one seldom sees a fair-haired sufferer—but, of course, these compose a smaller proportion of the population. Timme has stated that adolescence is the average time of onset, and this fits in with one's own findings, between 10 to 20 being a safe average limit.

I think any manifestations before the age of 10 appear to be of the nature of cyclical vomiting or perhaps acidosis, because the child who gets acidosis is just the type who later may grow into the type of the typical migraine patient. This is a point on which perhaps those who see and treat many children could throw more light; I know that I have seldom had children referred to me before the age of 10 who could be definitely labelled migraine.

The number of attacks, and their severity, tends to become less as the patients grow older, and we seldom find old people who get attacks of a severity anything like those which they suffered when in early adult life; I know one man who still got occasional mild attacks at 70.

I have mentioned that the migraine patient is on the average of superior intelligence; this being so, one would expect to find a higher proportion of sufferers among university students and graduates, and a reference to statistics shows that this is evidently true. Balyeat (1939) mentions that in America the chief groups involved are students, teachers, doctors, nurses; and other statisticians have included clergymen and engineers as well. Balyeat states that about 8 per cent.

of all doctors and medical students suffer from migraine, whereas in labourers it is only about 4 per cent. From my own experience I would have thought 4 per cent. to be high, for I have no doubt that many of those present will agree that it is relatively seldom that one finds typical migraine in hospital practice, whereas in private it is fairly common, many cases being referred simply as headache, and only on careful taking of the history, both personal and family, can one definitely come to a diagnosis of migraine; many of these unfortunate people having done the rounds of a number of doctors before a definite diagnosis has been arrived at, and the condition explained, and put in its true light to them.

Occupations requiring much technical skill of a fine nature, and involving long continued concentration, also predispose to attacks, because the very nature of the occupation attracts the type of individual who is predisposed to migraine. It was interesting to observe among naval personnel how quite a number of men were referred with headache, which was so severe in times of stress as to interfere with their efficiency, and many of these men had attained to positions of relative eminence through their mental superiority, only to find that because of untimely attacks of migraine they were unable to maintain that eminence, and had, perforce, to change their specialist branch for some other which did not expose them to the same strain, and stress of mind.

Migraine and Allergy.

Balyeat, who believes that migraine is largely allergic in etiology, makes the interesting observations in regard to *allergic* patients, that *firstly,* their general health is considerably above average; and *secondly,* that a study of the mental activity of allergic children showed 75 per cent. to be either in the superior, very superior, or genius class. He concludes that these observations equally apply to migraine.

Interests.

For many years, when examining patients with headaches who have come for diagnosis and treatment, and also with typical migraine, I have enquired into their hobbies and recreations with decidedly interesting and helpful results. A very considerable proportion was musical, many capable of producing music, either vocal or instrumental, others who loved music and who listened to and appreciated it, without the gift of production having been developed. Some were artistic and able to draw or paint, or produce objects of an artistic kind—who were in effect creative —and again, many who could appreciate form and colour without being able to create. In this class one had some who were deeply interested in photography. Another group was given to horticulture, and spent much time laying out gardens and tending flowers and vegetables.

It was also striking how many of these people were interested in model-making and carpentry, usually of a fine type, such as cabinet-making; these were chiefly men, the women usually being interested in fine needlework. Then the groups interested in rhythm, those who were interested in poetry and the drama, were frequently met.

It appears to be relatively seldom that the out-and-out sportsman who plays

vigorous outdoor games, and spends much time out of doors in pursuit of his sport, suffers from migraine. I must make one exception to this and that is fishing, for a number of migraine sufferers are ardent followers of Izaac Walton. It will be seen from the above that the interests and hobbies of these patients are creative, and in many cases their pursuits are essentially solitary in nature.

One might perhaps hazard a guess at the reasons for this, namely, that this particular type requires, and seeks, more time for mental rest away from the rush and noise of society and work, in order to rearm his more sensitive make-up for the everyday work of life.

Heredity.

Many patients give a definite history of heredity, not necessarily of headache only, but often of one or several members of the group of allergic diseases. W. Timme (Oxford System Medicine) states 50 per cent. One is often struck by the number of times that the mother of the person under consideration has been the parent who has so suffered, rather than the father. This is borne out by W. Timme's statement that the mother transmits the disturbance in 75 per cent. of cases. Balyeat states that the inheritance cannot be sex-linked, and W. J. Allen, in Archives of International Medicine, who analysed four hundred cases, believes that it is transmitted as a dominant characteristic.

Time of Onset.

A further interesting series of facts which emerges from a study of this disease can often be elicited. Many women only get attacks at a menstrual period, and do not have any attacks when pregnant. Often one gets the history that the patient only gets attacks on a Sunday, or a Monday morning, and that they are liable to attacks if they remain in bed longer than usual, either at a week-end or when indisposed from some other cause. Others get attacks before undergoing some mental ordeal, such as an examination, a solo performance, a musical competition, reading a paper, a critical operation, etc., and others suffer when the ordeal is over, but, interestingly enough, few seem to get an attack during the ordeal.

Some attacks begin at night, and many people find a migraine present on awaking, or it may develop before arising, and again there are those who know on awaking that they will probably have an attack later in the day.

Length of Attack.

The length of attack varies greatly in different individuals, and also in the same individual. Some who are in the severe category may have attacks lasting up to a week, and get into a state of "status migrainous," becoming dehydrated and showing alkalosis from vomiting. One has met a number who get definite sugar hunger, characterised by a longing for something sweet to eat, and also persistent yawning without feeling sleepy or unduly tired; this is relieved by a meal, or even a solitary sweet will help.

Precipitating Causes.

Quite a variety of circumstances can give rise to attacks: firstly, *psychical,* such

as fear, apprehension, worry, annoyance, anger, and, indeed, any emotion is liable to produce an attack, including sexual excitement.

Physical: within the individual—we may find constipation, naso-pharyngeal infections, dental causes, sinus infections, gynæcological disorders, and various other physical conditions which may produce debilitating or toxic effects, and which may also affect the individual psychically as well as physically.

Physical: outside the individual's body—such as exposure to cold, bright light, explosions, irritating fumes to nose, excessive heat, etc. Changes in barometric pressure and humidity are important also. Diet is also quite a potent factor in some patients, and here migraine shows its fairly close alliance to allergy, an indiscretion being sure to produce an attack. Often a quorum of predisposing factors is necessary.

Prodromal Symptoms.

Frequently before the onset of an attack some people are definitely euphoric, feeling unusually well and happy, with a mind which is unduly active and acute; others feel depressed and dull, have no interest in work or play, and feel, and are, actually less efficient than normal; they may also be restless and irritable: this is said to occur before about 50 per cent. of attacks. Abnormal appetite is often complained of before the attack begins, accompanied by an unusual craving for certain foods.

Others, again, feel unduly sleepy and drowsy and have difficulty in concentrating on their work; they will tell you that they have had a marvellous night's sleep, but know this foretells an attack. Many have definite gastro-intestinal disturbance, such as diarrhœa, constipation, or undue flatulence, and an interesting fact which often emerges is, that both stools and flatus are definitely offensive on many occasions before an attack. These symptoms may occur in the same individual during successive attacks, or the changes may be rung from diarrhœa to constipation.

Attack—Auræ.

The actual attack is usually divided into the *aura* stage and the *attack* proper, which begins with the onset of pain, and later vomiting. The auræ are many and varied, and have been conveniently divided into groups by Balyeat:—

(a) Vertigo.—This is a dizziness of varying severity, from a mild sense of instability to very definite vertigo.

(b) Visual disturbances.—These are perhaps the best-known symptoms, being the most obtrusive and the most annoying.

The commonest are probably the zig-zag figures of the field of vision, and may be in one or both eyes, usually both, and tend to travel outwards and disappear; some patients get definite fortification figures instead, but they seem less common.

Another peculiar appearance seen is that of rippling waves of light, which may be coloured, and which seem to produce a shimmerng curtain between the observer and the object which he is fixing. Coloured spots and patches of different sizes and shapes, which may remain stationary or move about, or vary in shape and size, also occur. In this connection patients occasionally mention that they have had

dreams just before awaking with a migraine which included lights and explosions, and which would seem to suggest that the attack can begin during sleep; indeed, I have awakened with a full-blown migraine, and felt that the pain was the cause of my awakening, the aura presumably having occurred during sleep.

Some people always get one type of visual aura, while others get different types of aura in successive attacks. Central scotomata occur which are negative in type, a complete blank being present at the centre of vision, and the patient cannot read, or see accurately what he is doing; this gradually enlarges, and then seems to either get smaller, or just generally disperse; it occurs in both eyes as a rule.

Hemianopia is also a well-known phenomenon, but I have no personal experience of this, and there is some difference of opinion among the various authorities. Russell Brain states that it is a homonymous hemianopia, developing from the scotoma: it seems odd that I have come across very few of these in my own experience. Parsons mentions that the headache and the hemianopic field are on opposite sides. Wilfred Harris has mentioned that it suggests an epileptiform discharge spreading in the visual cortex, but Hubbell, quoted by Foster Moore, states that in fifteen hundred cases of migraine he was unable to find any association with epilepsy. Russell Brain and Foster Moore give confirmatory evidence for this also.

(c) Auditory symptoms occur—and may take the form of low buzzing tinnitus, or of definite dulness of hearing lasting a varying time.

(d) Olfactory phenomena are less common, but patients may complain of temporary changes in smell and taste, usually rather unpleasant in type.

(e) Sensory disturbances are common, such as paræsthesias and anæsthesias—these may occur in face or tongue and frequently in the arm, a glove anæsthesia being occasionally found, less commonly in the leg, and the sensation usually begins in fingers or toes and spreads upwards. Balyeat states that in Hemicrania the parasthesias occur on the side opposite to the headache; this I cannot confirm from personal experience, as one has noticed that the parasthesias occur in what may be termed severe attacks where the headache seems to overflow to, and to be present on the opposite side of the head as well. Sometimes tingling and undue sensitivity or itching of the skin occur.

(f) Motor disturbances seem to be rare, but, of course, temporary diplopia is well-known and is very alarming; it may be present for a few seconds to quite a long period, even days.

In this connection, perhaps, one might mention ophthalmoplegic migraine. There is some difference of opinion as regards the causation of this condition; many authorities, including Parsons, Russell Brain, and Carmichael, are of the opinion that it is doubtful if this condition exists as a functional disease, but that it is usually a manifestation of organic disease of the brain, one feature of the condition bearing this out being, that it is always on the one side, the headache sharing this character also. Another point of interest is, that attacks of migraine which begin later in life should be viewed with suspicion, for they are often the herald of some intra-cranial organic disease, or impending intra-cranial catastrophe.

Aphasia may perhaps be included under motor lesions, as the patient at one stage knows what he wishes to say, but just cannot articulate, and we may have agraphia as well. This merges into the next stage, where we have—

(g) Mental confusion—and here there is a very definite inability to think clearly, or even to call into consciousness the names of the most commonplace objects; this is very distressing, and renders the victim temporarily incapable of dealing with any of the ordinary activities of life; fortunately, however, with the march of symptoms, this is soon left behind.

(h) Vasomotor disturbances occur regularly, with pallor and chilliness and later flushing, throbbing, nasal congestion, and changes in the salivary secretion—being increased or diminished in different people.

Photophobia is frequently present in varying degree, and the patient usually craves darkness, warmth, silence, and solitude.

Attack Proper.

The attack proper usually begins with the onset of the headache, the pain starting as a hemicrania, which gradually increases in intensity, and is usually situated behind one eye or in the frontal region, of a boring and at times almost intolerable character, aggravated by any effort and also by ocular movements; coughing and stooping increase it markedly.

The pain often spreads across to the other side, and also more widely over the cranium generally. The usual rule is for the pain to follow the aura, but frequently the pain starts without the patient being aware of any aura. The severity varies greatly in different people and also in successive attacks in the same individual. Nausea and vomiting may occur before the headache starts, and, as a rule, if they are going to occur in the attack, will do so when the pain reaches its maximum intensity.

Vomiting is common in children, and, of course, this adds materially to the misery of the individual, as it increases the pain very materially during each bout of retching. Later in life the vomiting tends to become a less obtrusive feature, but nausea may persist with each attack instead. The vomiting does not produce any marked relief, and retching may continue for a considerable time, leaving the sufferer very weary, miserable, and exhausted. If it persists for long, a condition of alkalosis develops.

It has been stated that 80 per cent. of men and 90 per cent. of women have had vomiting at some time in the course of their migrainous attacks. The vomiting and pain gradually subside, and frequently the patient goes to sleep, awaking after a matter of hours feeling rested and free from symptoms. Many, however, are left with a definite post-migrainous condition, which is characterised by sleepiness, depression, exhaustion, and sometimes actual bodily soreness; this state is more common if the patient has not been able to go to sleep just after the attack.

Polyuria is a common post-migrainous symptom, large quantities of pale clear urine being passed at fairly frequent intervals. Between attacks, good health and a normal feeling of well-being are enjoyed by the large majority of sufferers.

Migraine has been divided into various types, quite unjustifiably I think, and this only tends to confuse, as one feels that they are really only different manifestations of the same condition, because the different types often occur in the same individual in different attacks and at different periods of life.

Pathology.

Migraine has no known pathology, being a functional disease, and no one appears to have died of migraine per se, so that no assistance of any value has been given by post-mortems.

Theories.

One has read with interest—but with relatively little benefit—much about the researches into the causation of the condition. The various laboratory examinations which have been carried out seem to give very inconclusive results, such as blood, urinary, metabolic, radiological, gastric, and allergic tests and examinations, although a considerable proportion shows allergic sensitivity : this is put somewhere about 90 per cent. by Balyeat, who did extensive allergic testing in a series of 350 cases, using both dermal and intra-dermal methods of testing, the latter apparently being the more sensitive test. It has been stated that the blood urea is raised during an attack, but apparently this is only definite if the patient has been vomiting for a considerable time, and he becomes dehydrated. Contraction of the retinal vessels on the affected side has been mentioned, but the majority of authors state that this is inconclusive, and during attacks on a number of occasions, I have asked my colleagues to look at my fundi, and they were unable to detect any difference in the calibre of the retinal vessels on the two sides.

The various theories put forward include :—

Reflex irritation from elsewhere in the body.—In this there is certainly a great deal of importance, as almost all the various systems can play a part in precipitating an attack: teeth, nose, eyes, ears, throat, gastro-intestinal tract, generative apparatus, acting as reflex irritants; perhaps the eyes being one of the most important in this group.

The fact that evidence of cortical irritation occurs has led to the promulgation of theories which presuppose interference with the cerebro-spinal circulation by changes in the choroid plexus. Moebius, in 1894, suggested adhesions between cortex and dura as a possible cause.

Intestinal stasis has been blamed, and certainly changes in bowel function do occur often before an attack comes on, as has been mentioned. Periodic swelling of the pituitary is another cause put forward by W. Timme (1926).

Toxic conditions are also blamed, and here again any part of the body which can act as a septic focus may be a factor in predetermining the frequency and severity of attacks, conditions such as apical dental abscess, or empyema of antrum, where the sepsis is closed, being very prone to aggravate the condition.

Endocrine dysfunction is another theory which is suggested, and here we have evidence that women who frequently have an attack at a period are free from

attacks during pregnancy, and after menopause also. Some hold that many sufferers show definite signs of endocrine dysfunction.

The vasomotor theory receives considerable support from observations of pallor, flushing, sweating, and the frequently observed sign or symptom of dilated superficial temporal vessels during the attack. Considerable experimental and pharmocological work has been done on this line of research.

Lastly, we have the allergic theory which presumes patches of œdema in the brain, produced by the circulation of substances in the blood, to which certain areas of the brain are allergically responsive, similar to the occurrence of urticaria elsewhere in the body. As has been truly said, where many theories as to causation exist, no one is completely satisfactory, and the same applies to treatment.

Migraine will hence be seen to be a functional disease to which an individual is predisposed by heredity, attacks being precipitated by many conditions and circumstances within and without the body of that individual.

Treatment.

The treatment of migraine has always been looked upon as unsatisfactory and the disease incurable, but I think this is an unduly pessimistic view, because a very great deal can be done towards cure, either complete or, at any rate, rendering the attacks less frequent and less severe. Many hours of misery can be spared by an intelligent and sympathetic approach to, and persistent prosecution of, the treatment.

Preventive.—As regards preventive treatment, probably the only method is eugenics, but as love is stated to be blind, and indeed often appears to be so, it is unlikely that at the present stage of our civilisation this method will be widely used.

Elimination of predisposing causes.—The elimination of predisposing causes is the first step in the treatment, and this covers a very wide range. Avoidance of undue and unnecessary physical and mental fatigue is important, but here it is the latter which is the more so, because the patient is often benefited by exercise in the open air, as it gives him a chance to forget the various anxieties and worries of life, and to keep himself physically fit. The migraine sufferer should so order his life, if possible, that excesses of emotion are avoided in work or play, and this is not always by any means easy, involving for some drastic changes in their habits of life, and also to see that there is sufficient rest of mind and body to suit their own special requirements.

Special senses.—Disturbance of special senses should be sought, and here, perhaps, the eyes are most important, as refractive error and muscular imbalance may play a large part, and it is an interesting fact that these patients are just the type from their artistic leanings (due to their better perception of small differences) where a small error may produce marked symptoms, and an accurate correction, a brilliant result—this was stressed by the late Colonel Elliott when writing on migraine.

Septic foci.—All the many and varied regions which may be acting as septic foci

should be searched, and if any definite cause is found, it should be eliminated where possible, teeth and sinuses being common offenders.

Surroundings.—Certain factors in the surroundings of the individual should receive attention, exposure to damp and cold, heat, bright light, and fumes of a character likely to produce respiratory irritation come into the picture.

Diet.—Diet is important, because many patients appear to be definitely allergic, and they will tell you that they cannot eat certain foods, as an attack follows promptly on what, for them, is a dietetic indiscretion. This is a difficult subject, for there is such a wide difference in individual sensitiveness, that each must be a law unto himself. Many writers have laid down diets for migraine, but one feels that no definite diet will cover all cases.

Constipation.—Constipation plays its part, and some will tell you that if on arising they have the warning signs of an impending attack, and succeed in emptying the bowel satisfactorily, the attack may be aborted, but this may apply also to those not predisposed to migraine, as is well known.

Gynæcological causes.—In women who get attacks at a menstrual period, some form of glandular therapy, such as ovarian extract, has been tried, but apparently with somewhat contradictory results.

Allergy.—Balyeat recommends that all patients who suffer from migraine should have the skin tests for allergy performed, and states that in his series 70 per cent. were skin-sensitive to one or more of the specific food factors and that those who did not so react should have food elimination tests, such as Rowe (Philadelphia) has devised. I have no doubt that where the individual can be proved sensitive to certain articles of food, removal of these from the diet will prove of great value.

A number of migraine patients also suffer from allergic rhinitis, and here the cause may be inhaled or ingested, and this is evidence for the allergic theory, unless the nasal allergy is a parallel affection in a predisposed individual. In the allergic patient desensitisation may be a useful line of treatment, and in a certain proportion of cases of migraine, may alleviate or even cure. A few people complain that excessive smoking is liable to precipitate an attack, and a certain proportion consider alcohol to be a factor in the production of an attack; others consider that alcohol tends to abort it, if taken early in the attack.

Surgery.—Surgery comes into the picture in the treatment of many of the reflex or toxic factors, such as sinuses, chronic appendix, deviated septum, teeth, and here impacted wisdoms can precipitate attacks, also gynæcological conditions may prove potent factors in keeping the tendency to frequent attacks operative.

Symptomatic.—The remedies recommended for treatment are legion, and almost as many drugs as we have in the Pharmacopeia have been suggested as cures, indicating the lack of efficacy of any one of them. In a relatively mild attack some of the sedatives, such as aspirin, luminal, triple powder, barbiturates, etc., are definitely helpful, but in the severe attack apparently most of these remedies are powerless to stem the march of the symptoms.

The patient is usually irritable, feels cold, and objects to noise and fuss, and these may be the reasons for the craving for solitude, quiet, warmth, and darkness, which

are so important; hence, probably the best treatment is bed with a hot jar, drawn blinds, and leave the patient alone, hoping that sleep will soon ensue; a warm bath is sometimes also beneficial.

Drugs.

In view of the fact that a stage of vaso-constriction appears to occur early in the attack, with chilliness, pallor, etc., vasadilators, such as nitroglycerin and amyl-nitrite, have been prescribed (Osler), but the results are variable. Following this stage comes one of vaso-dilatation with flushing, throbbing, nasal obstruction, sweating, etc., and here the use of vaso-constrictors has been suggested, but again with inconsistent results.

The presence of an oliguria early in an attack has been mentioned, followed by diuresis, and for this condition urea has been administered, with relief in some cases (J. A. Brown, *B.M.J.*, 1943). Carbachol has been tried with good result, as also has caffeine, probably because of their diuretic effects. In the early stages a drink of glucose helps a certain number, but with others tends to make them sick, later it may help the alkalosis, however. "Alkazane" has been found useful also in the early stages of the attack, but usually if taken late has no effect, before the severe stage is reached. In prolonged attacks Osler mentioned the use of bromides, probably to lower the patient's threshold and stop the persistent retching. In 1792 Parry observed that pressure on the carotid on the side of the headache produced relief, but on release of the vessel, the pain was increased, and so the theory of stretching of the temporal artery, in which probably the intra-cranial arteries share, has been put forward by Graham and Wolff (1938).

Experimental work confirmed this, and the injection of ergotamine tartarate .5 mg. intravenously or intramuscularly can produce rapid and complete relief, the former route, of course, being more rapid; the action of ergotamine tartarate is that of a vaso-constrictor, ergometrine has also been used, having a similar action. Recently, acetylcholine has been given in small doses, 1 mg. B.I.D., later reduced to a maintenance dose of 1 mg. once per day; the action of this drug is, of course, that of a vasodilator.

Post-Migraine.

In the post-migrainous stage the patient usually feels exhausted by the attack, if he has not gone to sleep, and as many are in a rather nervous and jumpy state, it is well to put them to bed with a warm drink and, if necessary, to induce sleep by some gentle narcotic. If suffering from nasal congestion, as some do, the use of a nasal astringent will give comfort, but this should not be irritating in character, and here benzedrine is best avoided on account of its stimulating tendency.

Between Attacks.

The treatment between attacks is largely the general hygiene of life, and here the avoidance of those factors which each patient rapidly learns to be precipitants is most important. And he well knows that, if through necessity or choice he transgresses, an attack is liable to follow. Overwork is one of the most potent of

these, and this brings in its train various other factors which tend to pile up, and force the victim to lower his tempo of life, or perhaps stop altogether, until he has had time to rehabilitate his overworked organism.

As regards drugs in the interim period, benefit has been derived from small doses of ergotamine tartarate (femergen), 1 mg. per day dissolved sublingually, the only danger being the remote one of ergotism. As before mentioned, a maintenance dose of acetylcholine has been used, and, I believe, with very satisfactory results, but of this I have no personal experience.

Phenobarbitone has been of assistance in limiting the frequency of attacks in certain cases, but it is well to avoid the use of habit-forming drugs for obvious reasons.

SUMMARY.

Hence it will be seen that while migraine is a very definite entity with a clear-cut symptomatology in its typical form, difficulty arises because its manifestations vary markedly in degree in successive attacks, and in different individuals.

The name migraine should not be loosely used for any form of headache, as so often appears to be the case.

The large number of drugs used in the treatment has been mentioned, but when one considers all that can be done in ways other than drugs, perhaps the treatment falls into better perspective, and the importance of drug treatment assumes smaller dimensions. It has been well said that many drugs owe their efficacy to the confidence with which they are offered, and the faith with which they are received.

I have not dealt with the differential diagnosis of migraine, but rather have endeavoured to outline the condition so that it may stand out more clearly from the other types of headache by virtue of its own characteristics.

I have presented this paper to you in the hope that with the accumulated knowledge and experience of the disease here present, some further facts may come to light from those whose knowledge of the treatment of this condition is wider than my own, and who, perhaps, see groups of people and types of cases which in the ordinary course do not pass my way.

REVIEW

FOOD AND NUTRITION. By E. W. H. Cruickshank. Edinburgh: E. & S. Livingstone Ltd. 16s.

To the busy practitioner or student who wishes to keep abreast of recent work on the problems of dietetics and nutrition, this book can be warmly recommended. In the brief space of 316 pages the author deals concisely with the constitution of different foodstuffs and their protein, fat, carbohydrate, and mineral salt content. The latest advances in our knowledge of vitamins is reviewed. Chapters on vegetarianism, the dehydration and preservation of foodstuffs, and dental caries lend much interest to a very readable and informative book. The concluding chapter is devoted to a discussion of the new Food and Agriculture World Organization. S. A.